Amendments to the Claims

This listing of claims will replace all prior versions and listings of claims in the application:

Claim 1. **(Currently Amended)** A method for nucleotide base sequencing comprising the sequential steps of:

(a) immobilizing a plurality of polymerases on a solid support in the absence of nucleic acid wherein each polymerase is immobilized in a reaction center of said solid support, and wherein said solid support comprises a plurality of reaction centers each containing a single polymerase located at an optically resolvable distance from each other;

(b) providing a single nucleic acid sample for each of the plurality of said polymerases and a plurality of different oligonucleotide primers, wherein each of the nucleic acid sample hybridizes to a single oligonucleotide primer;

(c) providing four different nucleotides, each nucleotide being differentially-labeled with a detachable labeling group and blocked at the 3' portion with a detachable blocking group, wherein the polymerase extends the primer hybridized to the nucleic acid sample with a single differentially-labeled nucleotide that is complementary to the sample nucleic acid thereby creating a single detachable labeling group attached to the solid support;

(d) removing nucleotides that have not been incorporated in the primer;

(e) detecting the single labeled nucleotide incorporated into the elongating primer in each of reaction centers by detecting the single labeling group attached to the solid support, thereby identifying the complement of the labeled 3'-blocked nucleotide at each said reaction center;

(f) separating the 3' blocking group and the labeling group from the incorporated nucleotide;

(g) removing the separated 3' blocking group and the separated labeling group of step (f) to produce an unlabeled nucleic acid sample;

(h) confirming separation and removal of the 3' blocking group from the nucleotide incorporated in the primer of each reaction center by detecting for the presence of the single labeled nucleotide in each of the reaction centers wherein the presence of a labeled nucleotide indicates that the step of separating the labeling group from the incorporated nucleotide was not successful; and

(i) repeating steps (c) through **[[(g)]]** **(h)** until either no new nucleotides are incorporated in step (c) or the 3' blocking group persists in not being separated and removed in steps (f) and (g),

whereby the order in which the labeled nucleotides in step (e) are detected in a reaction center corresponds to the complement of the sequence of at least a portion of the nucleic acid sample in that reaction center.

Claim 2. (Previously Presented) The method of claim 1, wherein the 3' blocking group and the labeling group are separated from the incorporated nucleotide by photochemical activation.

Claim 3. (Original) The method of claim 1, wherein the 3' blocking group and the labeling; group are separated from the incorporated nucleotide by chemical or enzymatic activation.

Claim 4. (Original) The method of claim 1, wherein the differentially-labeled labeling group is a fluorescent label, a plasmon resonant particle, or a quantum dot label.

Claim 5. (Original) The method of claim 1, wherein the labeling group is directly attached to the detachable 3' blocking group.

Claim 6. (Original) The method of claim 5, wherein the detachable 3' blocking group is a 2-Nitrobenzyl group.

Claim 7. (Original) The method of claim 1, wherein the labeling group is attached to the base of each nucleotide with a detachable linker.

Claim 8. (Original) The method of claim 7, wherein the detachable linker is a 2-Nitrobenzyl group.

Claim 9. (Original) The method of claim 1, wherein the polymerase is selected from the group consisting of DNA polymerase, RNA polymerase, and reverse transcriptase.

Claim 10. (Original) The method of claim 9, wherein the DNA polymerase is selected from the group consisting of the DNA polymerase from Bacillus stearothermophilus, the DNA polymerase from Thermus acquaticus, the DNA polymerase from Pyrococcusfuriosis, the DNA polymerase from Thermococcus litoralis, the DNA polymerase from Thermus thermophilus, the DNA polymerase from bacteriophage T4, the DNA polymerase from bacteriophage T7, the E. coli DNA polymerase I Klenow fragment, and E. coli DNA polymerase III.

Claim 11. (Original) The method of claim 9, wherein the RNA polymerase is selected from the group consisting of the RNA polymerase from E. coli, the RNA polymerase from the bacteriophage T3, the RNA polymerase from the bacteriophage T7, the RNA polymerase from the bacteriophage SP6, and the RNA polymerases from the viral families of bromoviruses, tobamoviruses, tombusvirus, leviviruses, hepatitis C-like viruses, and picornaviruses.

Claim 12. (Original) The method of claim 9, wherein the reverse transcriptase is selected from the group consisting of the reverse transcriptase from the Avian Myeloblastosis Virus the reverse transcriptase from the Moloney Murine Leukemia Virus, the reverse transcriptase from the Human Immunodeficiency Virus-1, and modified T7 polymerase.

Claim 13. (Original) The method of claim 1, wherein the labeled nucleotide is detected by the detection method selected from the group consisting of total internal reflection fluorescence microscopy, photon confocal microscopy, surface plasmon resonance, and fluorescence resonance energy transfer.

Claims 14.-23. (Canceled)